Facility Name	Michigan Potash Operating, LLC	Contact	Theodore A. Pagano	Class:	II
EPA Permit	MI-133-1I-0006	State Permit #		Permit Type	Individual Permit
Well Name	MPC 3D	Well Status	Proposed Well (associated with permit application only)	Well Status Date	1/16/2015
County	Tribal Name				

Monitoring

Add Report Report History

Tests

Edit	Category	Type	Date	Result

Add Test

Inspections

Type	Date

Add Inspection

Violations

Add Violation Add Enforcement

A. Area of Review Methods

What is the AOR based on? Fixed 2-mile

Save Cancel

B. Maps of Wells : Area of Review

Does the topographic map show all of the required features? (The map should include all surface features man-made or natural, and subsurface features such as mines, wells, and known faults) Yes

Are there topographic maps that extend one-mile beyond the property boundary that depict the facility and each of its intake and discharge structures, hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected; and those wells, springs, and other surface water bodies and drinking water wells listed in the public records within a 1/4 mile. Yes

Is there a list of all of the land owners within the AOR? Yes

Surface elevation of the wellsite 1190

The elevation is based on Ground level

Save Cancel

C. Corrective Action Plan and Well Data

Number of wells that are temporarily abandoned 0

Is the construction adequate? NA

Number of wells that are plugged and abandoned 23

Is the construction adequate? Yes

Number of wells that are producers 1

Number of wells that are injectors	6
Is the construction adequate?	Yes
Number of Other Wells	0
Is the construction adequate?	NA
Is there a corrective action plan?	NA
Number of wells that penetrate into or through the confining zone	30

Save Cancel

D. Maps and Cross-sections of USDWs

Formation name of lowest USDW:	Glacial Drift
Is there a statigraphic column that shows all USDWs?	Yes
Depth to base of lowest most USDW(ft)	620
Method for USDW determination	hydrogeologic test holes. 25 Characters Left

Save Cancel

F. Maps and Cross-sections of the geologic structure of the area

Is there a regional cross-section map and structure contour map	Yes
Is there a site specific cross-section map and structure countour map	Yes

	Injection Interval	Confining Zone
Formation Name	Amherstburg Formation	Detroit River Group
Lithology	Sandstone	Anhydrite
Depth to Top (ft)	4962	4170
Depth to Bottom (ft)	5550	4962
Permeability (md)		
Porosity (%)		

What is the separation between the top of the injection zone and the base of the USDW?	4342
Were the presence and extent of natural or induced fractures in the injection and confining zones adequately investigated?	Yes

Save Cancel

H. Operating Data

The injectate is	liquid
Injection Rate Unit	Gallons per minute
Method used to determine maximum injection pressure	Fracture Gradient equation
	100 Characters Left
Source of fracture gradient	Default
Known fracture gradient	0.80
Maximum expected injection rate(gpm)	864000
Maximum enforceable injection rate(gpm)	
Maximum specific gravity of injectate	1.25
Add Safety Factor For Specific Gravity?	
Friction Allowance	
Technical basis for friction allowance	
Maximum injection pressure(r5_mip_calc_formula) txtr5MipCalcFormula / lblr5MipCalcFormula	1269 1269
pH range	
Does the corrosion monitoring comply with 40 CFR part 146.68(c)?	NA
Is corrosion monitoring required	
What is the composition of the annulus fluid	Brine Water with Corrosion Inhibitors

Save Cancel

Does the formation testing proposed meet CFR 146.12 (d) and (e) [for non-haz] or 146.66 [for haz] or 146.32(b) [Class III]?	Yes
Are there adequate procedures for acquiring formation pressures above the injection interval?	Yes
Are there adequate sampling and analysis procedures for the first aquifer overlying the confining zone?	Yes
Are there adequate sampling and analysis procedures for the injection zone?	NA
Will there be coring?	No
Proposed method for determining fracture gradient	step rate test

Save Cancel

J. Stimulation Program

Is a stimulation proposed	Yes
What is the type of stimulation?	acid
Is this type of stimulation approved?	Yes

Save Cancel

K. Injection Procedures

Is there a plant plan that shows the stream flow lines?	Yes
Are there descriptions of any filters, storage tanks, and/or pretreatment?	Yes
What is the storage tank capacity?	147000
What is the rate capacity of the pumps?	660
What is the pump capacity type?	(None)
Is an alarm system proposed?	Yes
What are the alarm thresholds?	
The shut-off system will be	Manual
What are the shut-off thresholds?	MIP

Save Cancel

L. Construction Procedures

Is this a new well, existing or a conversion	New

Save Cancel

M. Construction Details

	Pipe/Hole set				Cemented		
	From top (ft)	To base(ft)	Pipe Size(in)	Hole Size(in)	Number of sacks of cement	From top(ft)	To base(ft)
Conductor							
Surface Casing	0	800	9.625	13.375	320	0	800
Intermediate Casing							
Long String Casing	0	5160	7	8.75	670	0	5160
Liner							
Perforated Section							
Open Hole	5160	5550					

Packer depth	5050
Tail Pipe depth	
What is the plug back total depth?	5550
What is the total depth of the well?	5550
Is the packer set 100 ft or less above the injection zone?	Yes
Tubing material	
Tubing size	

Save Cancel

O. Plans for well failure

What actions are proposed if MI is lost? shut-in, notify EPA, CP &

Save Cancel

P. Monitoring Program

Where is the sample located? At discharge of final filtra

Is there an adequate description of source(s) of waste? Yes

Is there a representative of waste analysis? Yes

What's the frequency of physical and chemical monitoring?

What's the frequency of monitoring reports?

Is there adequate waste characterization including compatibility? Yes

Is a ground water monitoring plan included? NA

Please describe waste recharacterization.

Is QA/QC adequate? Yes

Is WAP adequate? Yes

Is the monitoring and recording system for injection pressure, flow rate, volume, and annulus pressure adequate? Yes

Save Cancel

Q. Plugging and Abandonment Plan

How many plugs will be used to plug the well?

Generate Plugs

Signed estimate of plugging and abandonment costs (and post-closure costs, if applicable) by an independent firm Yes

Estimated Plugging Cost 30400

Estimated Post Closure Cost

Date the plan was signed

Date of 3rd Party Plugging Cost Estimate 9/15/2014

Save Cancel

Add Plug

R. Necessary Resources

Available Mechanisms

Individual state bond DEPNO59831331
Individual state bond DEPNO59831321
Individual state bond DEPNO59831311

Add

Selected Mechanisms

Individual state bond DEPNO59831331

Edit Mechanisms

S. Aquifer Exemptions

Is the company asking for an aquifer exemption? N

Aquifer Name None

Save Cancel

T. Existing Permits

List Existing permits and permit numbers N/A

List outstanding permit applications MI-133-1I-0004, -0005, 0

Save Cancel

U. Description of Business

Business description

Production and manufacturing of agricultural fertilizer.

169 Characters Left

Save Cancel

V. Compliance with other Federal Acts

Any designated wild and scenic rivers within the AOR? No

Has the permit writer evaluated whether there are endangered or threatened species in the AOR?	Yes
Are there any listed species in the AOR?	No
Will the permit need an ESA Clause?	No
Was the Historic Preservation Office contacted?	Yes
Are there historic resources present?	No
Is the well located in a coastal zone?	No
If yes, then has the permit writer contacted the State Coastal Management Program in writing?	NA
Does the permit application call for the diverting, impounding, deepening or controlling any surface water body in excess of 10 acres?	No
EJ number	2 ej screen

Save Cancel

X. Confidentiality

Has any part of this permit application been declared confidential by the operator? No

Save Cancel

Other

Comments

500 Characters Left

Update Cancel

Review Completion

Reviewer BATKA ALLAN

Signature Date 1/20/2016

Update Cancel